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L2 ANSWER 6 OF 17 CA COPYRIGHT 2004 ACS on STN
 AN 133:21363 CA
 ED Entered STN: 30 Jun 2000
 TI Sulfate-free fast rigid hydraulic binder compositions for shotcrete
 IN Mitkova, Darina
 PA Dyckerhoff A.-G., Germany
 SO Ger. Offen., 4 pp.
 CODEN: GWXXBX
 DT Patent
 LA German
 IC ICM C04B028-02
 ICS C04B024-28; C04B022-10; C04B022-06
 CC 58-3 (Cement, Concrete, and Related Building Materials)
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 19854477	A1	20000531	DE 1998-19854477	19981125
	DE 19854477	C2	20020314		
	EP 1004555	A1	20000531	EP 1999-117565	19990906
	EP 1004555	B1	20011205		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	AT 210104	E	20011215	AT 1999-117565	19990906
	ES 2167980	T3	20020516	ES 1999-117565	19990906
	PT 1004555	T	20020531	PT 1999-117565	19990906
	NO 9905188	A	20000526	NO 1999-5188	19991025
	SK 283902	B6	20040406	SK 1999-1558	19991112
PRAI	DE 1998-19854477	A	19981125		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
DE 19854477	ICM	C04B028-02
	ICS	C04B024-28; C04B022-10; C04B022-06

AB The fast rigid compns. consist of sulfate-free mineral binder (typically, fine **portland cement** clinker, metallurgical sand, micro-silica, metakaolinite, zeolite, Ca-silicate, Ca-aluminate, and/or lime,) and 0.25-2 wt.% of sulfonate-free **superplasticizer** esp. polycarboxylate having mol. wt. 5000-50000 g/mol. Optionally, the binders comprise setting accelerators such as alkali hydroxides, alkali-earth hydroxides, alkali carbonates or bicarbonates, alkali silicates, Ca(NO₃)₂, Ca(HCOO)₂, alkali sulfates and/or pyrosulfates, and/or amines.

ST fast rigid sulfate free hydraulic binder shotcrete

IT Binders
 (S-free; sulfur-free fast rigid hydraulic binders for shotcrete)

- Portland cement
 - sand
 - microsilica
 - metakaolinite clay
 - superplasticizer

can be thicker

1, 2, 4, 5, 9-11